The performance of four possible rules for selecting the Prime Minister after the Dutch Parliamentary elections of September 2012

Thomas Colignatus

Thomas Cool Consultancy & Econometrics

2. February 2013

The performance of four possible rules for selecting the Prime Minister after the Dutch Parliamentary elections of September 2012

Thomas Colignatus, February 2 2013

http://thomascool.eu

http://econpapers.hhs.se/RAS/pco170.htm

JEL A2, D71, C88

Keywords: Political economy; public choice; political science; optimal representation; electoral systems; elections; coalition; impossibility theorem

Abstract

Economic policy depends not only on national elections but also on coalition bargaining strategies. In coalition government, minority parties bargain on policy and form a majority coalition, and select a Prime Minister from their mids. In Holland the latter is done conventionally with Plurality, so that the largest party provides the chair of the cabinet. Alternative methods are Condorcet, Borda or Borda Fixed Point. Since the role of the Prime Minister is to be above all parties, to represent the nation and to be there for all citizens, it would enhance democracy and likely be optimal if the potential Prime Minister is selected from all parties and at the start of the bargaining process. The performance of the four selection rules is evaluated using the results of the 2012 Dutch Parliamentary elections. The impossibility theorem by Kenneth Arrow (Nobel memorial prize in economics 1972) finds a crucially different interpretation.

Introduction

In countries like the US or the UK, voting goes in districts, and this this favours the existence of two or perhaps three parties. In Holland there is proportional representation and this allows a wider spectrum of opinions and parties. The latter seems an advantage for democracy but the cost of PR is that the parties must bargain to create a coalition government. What voters must figure out for themselves in the US and UK, that bargaining now is done by political professionals in the open, with the bonus that parties must show tolerance for different opinions. The system of districts apparently dates from the 18th and 19th centuries when simple methods were used to select delegates. Districts still arise naturally as for example the various nations in the European Union. Given the apparent advantages of PR it is interesting what we can learn about coalition formation.

Colignatus (2007, 2011) "Voting Theory for Democracy" (VTFD) suggests that a government "mirrorring" Parliament would tend to be optimal, i.e. that most parties would be represented in the government, or PR not only in Parliament but also in government. In that case the Prime Minister has the role of the chairperson and facilitator rather than the ideological leader. This also means that the issue on policy making could be rather distinct from the selection of the Prime Minister. In current practice, the choice on the Prime Minister tends to be conditional on agreements on policy. Such bargaining on policy might cause that a coalition is formed in which the largest party in Parliament does not partake, and then the largest party in that coalition would conventionally select the Prime Minister.

In Holland after elections for the House of Parliament, convention has a two-staged process. In the first stage the party with the greatest number of votes leads the efforts to form a coalition govern-

ment ("informateur"). In the second stage it is assumed that a majority coalition has been found, and the party with the greatest number of seats in that majority coalition selects the Prime Minister ("formateur"). On September 12 2012 the Dutch had Parliamentary elections. The highest score was for the VVD with 41 seats in a Parliament of 150, only 27% of the vote. This does not seem like a strong base to select a Prime Minister. However, the VVD made a coalition with the PvdA, to a total of 41 + 38 = 78 seats or 52%. Mark Rutte, the leader of the VVD, became Prime Minister. Lodewijk Asscher of PvdA became Vice-Prime-Minister. Diederik Samsom had been the lead PvdA candidate at the polls but chose to remain in Parliament.

Given the suggestion of a government mirroring Parliament, there is room to consider the selection process of the Prime Minister as a separate factor apart from policy bargaining. A better separate selection process of the Prime Minister could enhance the political base of the whole coalition. The current method of selection is an application of the Plurality voting rule. Other ways to select the Prime Minister are the Condorcet rule, the Borda count, and their combination the Borda Fixed Point method. When we better understand their performance then eventually Parliament might decide to use another method than current Plurality to select the politician to lead the efforts to form a coalition government.

The various approaches are mentioned by Saari (2001), "Decisions and elections", except for the Borda Fixed Point method. In his preface, Saari sighs: "I know that you messed up on some decisions. I sure have." There still is a case to be made for suitable election methods.

This present paper thus evaluates the performance of such selection rules. The results of the Dutch elections provide a testing ground. An earlier analysis along the same lines is Colignatus (2010b) on the elections in 2010. A new point of attention is that the current VVD & PvdA coalition does not have a majority in the Senate.

Foreign readers will hopefully not mind that we use the local letter soup. The CU and CDA are Christian parties. The VVD is the party of former EU commissioner Frits Bolkestein, and they are EU-sceptic neoliberal-conservatives. Pro-Europe liberals are D66. PVV is the party that gets international media attention for its desire to stop both the EU and immigration. Leftist are PvdA (pro-EU social democrats), SP (anti-EU socialists), and GL (the Greens). 50Plus is a one-issue party for the elderly.

Stockman et al. (2012) is a discussion in Dutch about the major possible coalitions, using an innovative scheme on these various party programs and seats. This present paper does not delve deep into the formation of the coalition. The issue may be mentioned however since it clarifies the utility of a more independent selection of the Prime Minister. Clearly the formation of a coalition is a tedious matter but it seems that the process could be simplified by using information on the preferences for the selection of the Prime Minister. This present paper concentrates on the more traditional issue of the voting mechanism to select the Prime Minister.

Plurality is the simplest scheme, and parties vote for their own candidate. As said, here VVD wins.

If the parties had provided their rankings, then we could determine other kinds of results. However, parties have not responded to an enquiry, and we thus do not know their rankings. This paper uses my guesstimate.

With Borda rankings, the CU is the winner.

In pairwise voting the CU is the Condorcet winner.

Pairwise voting however is notoriously unstable. In many elections there is no Condorcet winner, leaving one with the question what to do next. The Borda system of preference ranking has some drawbacks too; in fact, Condorcet presented his method since he was critical of the Borda count.

The overall best approach very likely is the Borda Fixed Point, see Colignatus (2007, 2011). This was developed with a somewhat different line of reasoning but it can be seen as a compromise between Borda and Condorcet.

For 2012 the Borda Fixed Point method selects the CU. This happens to coincide with the Condorcet winner since the CU apparently is rather high on the preference lists. CU has only 5 seats in a Parliament of 150 but apparently it has a strategic position. VVD with the greatest number of votes (41) only comes in fourth place in the overall ranking.

Appendix A investigates whether the VVD can affect this outcome by voting strategically. Other parties might try to block that stategy. **Appendix B** looks at the situation for the Senate. **Appendix C** has some residual comments on coalition formation. Political parties show curious swings in position and perhaps they might be helped with professional advice on consistency in what they want. Perhaps smart-phones can use an “app” with a political backbone generator to help political leaders on crucial moments.

The paper is embedded in *Mathematica*, a system for doing mathematics on the computer. This may make for a perhaps untraditional format, with hidden program code and input and output sections.

PM 1. This calculation is based upon my own guesstimate of the rankings by parties.

PM 2. An analysis for 2006, see Colignatus (2006), also selected Rouvoet (CU) as Prime Minister instead of Balkenende (CDA) who was appointed in the conventional manner. In the earlier paper (2010b) CU (Rouvoet) again become the winner. Rouvoet did not partake in 2012 and is now repaced by Arie Slob. Since the CU wins again in 2012, Arie Slob might still propose that the former CU leader André Rouvout would become the Prime Minister since he is better known in the country.

PM 3. A comparison of the United Kingdom 2010 and The Netherlands 2006 can be found in Colignatus (2010a).

Data

The outcome in September 2012 for a House of Parliament with 150 seats:

```
Parties = {{CDA, 13}, {CU, 5}, {D66, 12}, {GL, 4}, {PvdA, 38}, {PvdD, 2}, {PVV, 15},
   {SGP, 3}, {SP, 15}, {VVD, 41}, {"50Plus", 2}} // Sort;

Items = First /@ Parties;

NumberOfItems = Length[Items];

vlis = Last /@ Parties;
NumberOfVoters = Length[vlis];
```

The voting weights are fractions of 1.

```
Votes = vlis / Add[vlis];

shares = NRoundAt[ Votes, 2];
```

```
{Items, vlis, shares} // Transpose
```

50Plus	2	0.01
CDA	13	0.09
CU	5	0.03
D66	12	0.08
GL	4	0.03
PvdA	38	0.25
PvdD	2	0.01
PVV	15	0.1
SGP	3	0.02
SP	15	0.1
VVD	41	0.27

In Voting Theory, a deadlock may cause that the Status Quo persists. Since deadlocks can be frequent, the notion plays an important role. For the present discussion the Status Quo is just the first of the list of items, and it might be reset for a particular purpose.

```
StatusQuo[]
```

50Plus

Coalitions

Liljedahl (1995): “Many political assemblies are divided along party lines where each party usually vote as an unit. It is widely recognized that the power a party then can hold is not proportional to its number of representatives but rather to the number of winning coalitions it can create, the Banzhaf index. The index for a party is thus a count of the situations in which the party can tip the balance one way or the other.”

Using Liljedahl’s computer package for the calculations we can find how many coalitions each party might block.

```
BanzhafLiljedahl[Parties]
```

50Plus	16
CDA	158
CU	78
D66	134
GL	50
PvdA	442
PvdD	16
PVV	202
SGP	34
SP	202
VVD	546

However, the parties are arranged in an ideological space. Some may be extreme opposites and not be found in a single coalition. If this space is reduced to a single line going from (political) left to right, then we may conjecture the following (my guesstimate).

In April, before the September elections, GL (the Greens) were led by Jolande Sap, an economist, and they had a policy more on the right compared to earlier green policies. They supported a military mission to Afghanistan (Kunduz), which military mission was called “police supporting

police” to make it more acceptable. Sap supported a reduction of unemployment welfare claims and maintaining the 3% deficit rule of the EU. When the first Rutte cabinet fell in April, a temporary coalition was formed, nicknamed the “Kunduz coalition”, to establish a budget that satisfied the EU 3% deficit rule. This was a curious political event. The opposition parties flocked to help the failed government coalition, saved Mark Rutte and the VVD from disaster, and allowed them to enter the elections with the aura of success. A stricter strategy of the opposition would have been to let Rutte and the VVD suffer the misery that they had caused, and thus enter the elections in that miserable state. The PvdA was critical of that EU deficit rule and did not partake in the Kunduz coalition. At the elections in September the PvdA won seats and the GL lost seats. The GL number of seats dropped from 10 in 2010 to 4 in 2012. GL leader Jolande Sap resigned, and the party seems to have returned to a more traditionally leftist position. This affects the coalitions that are now possible. Politics remains with surprises. After September 2012, the PvdA embraced the EU 3% deficit rule and made a governing coalition with the VVD. Perhaps the experience of being left out of the Kunduz coalition was a strong incentive to prevent that another chance was missed.

Thus in April 2012, GL was to the right of PvdA. This would imply a different landscape in September 2012.

```
kunduz = {SP , PvdA , GL , D66 , PvdD , "50Plus" , CU , CDA , VVD , PVV , SGP};
```

```
coals = Coalitions[Parties, kunduz]
```

{SP, PvdA, GL, D66, PvdD, 50Plus, CU}	78
{PvdA, GL, D66, PvdD, 50Plus, CU, CDA}	76
{GL, D66, PvdD, 50Plus, CU, CDA, VVD}	79
{D66, PvdD, 50Plus, CU, CDA, VVD, PVV}	90
{PvdD, 50Plus, CU, CDA, VVD, PVV}	78
{50Plus, CU, CDA, VVD, PVV}	76
{CU, CDA, VVD, PVV, SGP}	77

However, after September 12 2012, GL is to the left of PvdA again.

```
spectrum = {SP , GL , PvdA , D66 , PvdD , "50Plus" , CU , CDA , VVD , PVV , SGP};
```

Restricting possible coalitions along this line:

```
coalshouse = Coalitions[Parties, spectrum]
```

{SP, GL, PvdA, D66, PvdD, 50Plus, CU}	78
{GL, PvdA, D66, PvdD, 50Plus, CU, CDA}	76
{PvdA, D66, PvdD, 50Plus, CU, CDA, VVD}	113
{D66, PvdD, 50Plus, CU, CDA, VVD, PVV}	90
{PvdD, 50Plus, CU, CDA, VVD, PVV}	78
{50Plus, CU, CDA, VVD, PVV}	76
{CU, CDA, VVD, PVV, SGP}	77

Thus there seem to be various possible coalitions, even when not mirroring Parliament but with the target to minimize the majority. The important position of the CU shows also from that it is in all these coalitions. The Christian Democrats CDA took a plunge from 41 to 21 to 13 seats from 2006 to 2010 to 2012 but still hold a key position. Above list is too optimistic, however. The coalitions with the PVV in it are less likely. The former coalition was with CDA & VVD & PVV and the PVV broke up, so there are hurt feelings, while the PVV also lost votes and its pivotal position.

The surprise outcome is that VVD and PvdA formed a coalition, coming in from the extremes with 41+38 = 79 seats. It is curious that Diederik Samsom of the PvdA did not even try the coalition on the left of center, possibly extended with CDA, given his earlier opposition against the VVD. Apparently the ease of discussion of having only two parties was seductive, but this also may neglect the risks in the future of losing votes on the right and left. Namely, Samsom of PvdA urged voters to

vote for him to prevent that the VVD would provide the Prime Minister. Apparently there were former voters of SP and GL who switched to PvdA indeed. But after the elections Samsom helped create a coalition so that Rutte of VVD could become Prime Minister again.

An alternative approach is to first select the Prime Minister and then form a coalition government that mirrors Parliament. In that case, the current political situation might cause the PVV and SGP do not partake in the government but the other parties could join.

Hypothesis

The statement of full preference orderings is a bit too complicated for the individual ballot box. However, the method can be used in Parliament by the Members.

The mathematical routines require party preference rankings on the selection of particular items. In this case we are looking at candidates for Prime Minister. We presume taht each party can present a candidate and then the Members of Parliament enter their orders of preference on the candidates. These preferences should best expressed not by the parties but by the individual Members of Parliament, but here we assume that Members vote along a party line.

Parties might increase their chances by proposing candidates that are well received by other parties. It is simplest to presume that their candidates will be the leaders at the elections.

(NB. An alternative is to allow parties to present more candidates, proportional to the size of the party. A big party might present both its leader plus some compromise candidates. However, since such compromise candidates might diminish the value of the leader, this is a less likely approach. In the present case of the elections of 2012, the PvdA leader on the ballots was Diederik Samsom, but he presented Lodewijk Asscher to represent the PvdA in the government.)

It is advisable that parties in Parliament (or rather MPs themselves) express their preference orderings. Lacking these (I am still trying to entice them to provide these), I give my own guesstimate. It may be noted that parties will adapt their preference orderings in the bargaining process, when parties drop policy aims and compromise. This aspect cannot be reproduced here.

The following guesstimate associates with above left-to-right scale but I inserted some modifications. For example, PVV has made itself quite unpopular. For example, 50Plus is a one-issue party and hence would be ideologically neutral, yet, parties on the right have a stronger dislike of one-issue parties and may percieve it as leftist too.

```
Pref[CDA] =
  {CDA > CU > VVD > PvdD > GL > SP > SGP > PvdA > "50Plus" > D66 > PVV };
Pref[CU] = {CU > CDA > SGP > PvdA > "50Plus" >
    GL > SP > VVD > PvdD > D66 > PVV };
Pref[D66] = {D66 > PvdA > "50Plus" > GL > VVD >
    PvdD > CU > SP > CDA > SGP > PVV };
Pref[GL] = {GL > SP > PvdA > "50Plus" > PvdD > D66 >
    CU > CDA > VVD > SGP > PVV };
Pref[PvdA] = {PvdA > GL > D66 > SP > PvdD > "50Plus" >
    CU > CDA > VVD > SGP > PVV };
Pref[PvdD] = {PvdD > "50Plus" > D66 > GL > CU > SP >
    PvdA > CDA > VVD > SGP > PVV };
Pref[PVV] = { PVV > VVD > CU > CDA > PvdD > SGP >
    SP > PvdA > "50Plus" > D66 > GL};
Pref[SGP] = { SGP > CU > CDA > PvdD > VVD > PVV >
    SP > PvdA > "50Plus" > GL > D66 };
Pref[SP] = {SP > GL > PvdA > "50Plus" > D66 > PvdD >
    CU > CDA > VVD > SGP > PVV };
Pref[VVD] = {VVD > CDA > CU > D66 > PvdD > "50Plus" >
    PVV > GL > PvdA > SP > SGP };
Pref["50Plus"] = {"50Plus" > D66 > PvdD > CU > PvdA >
    GL > SP > CDA > VVD > SGP > PVV };
```

These preference patterns can be translated in Borda ordinal preference scores. A high score is a high preference.

```
Preferences = PrefToList[ToPref @@ Pref[#]] & /@ Items
```

$$\begin{pmatrix} 11 & 4 & 8 & 10 & 6 & 7 & 9 & 1 & 2 & 5 & 3 \\ 3 & 11 & 10 & 2 & 7 & 4 & 8 & 1 & 5 & 6 & 9 \\ 7 & 10 & 11 & 2 & 6 & 8 & 3 & 1 & 9 & 5 & 4 \\ 9 & 3 & 5 & 11 & 8 & 10 & 6 & 1 & 2 & 4 & 7 \\ 8 & 4 & 5 & 6 & 11 & 9 & 7 & 1 & 2 & 10 & 3 \\ 6 & 4 & 5 & 9 & 10 & 11 & 7 & 1 & 2 & 8 & 3 \\ 10 & 4 & 7 & 9 & 8 & 5 & 11 & 1 & 2 & 6 & 3 \\ 3 & 8 & 9 & 2 & 1 & 4 & 7 & 11 & 6 & 5 & 10 \\ 3 & 9 & 10 & 1 & 2 & 4 & 8 & 6 & 11 & 5 & 7 \\ 8 & 4 & 5 & 7 & 10 & 9 & 6 & 1 & 2 & 11 & 3 \\ 6 & 10 & 9 & 8 & 4 & 3 & 7 & 5 & 1 & 2 & 11 \end{pmatrix}$$

PM. The party preferences might be used to indicate their potential coalitions, instead of the overall left-right spectrum. Comparing these might generate a better list of possible overall coalitions. But this may also create a false sense of accuracy.

The Borda Fixed Point (BFP) selection

Given the above data and assumptions, the Borda Fixed Point algorithm determines the fixed point, i.e. the winner who also wins from the runner up (the alternative winner if the overall winner would not partake).

```
BordaFP[]
```

CU

The Borda count merely sums the scores.

```
BordaAnalysis[] // N
```

$$\Big\{\text{Select} \to \text{CU},\ \text{BordaFPQ} \to \{\text{True}\},$$

$$\text{WeightTotal} \to \{6.02667,\ 6.86667,\ 7.29333,\ 6.92,\ 6.69333,\ 6.8,\ 6.87333,\ 3.19333,\ 2.8,\ 5.69333,\ 6.84\},$$

$$\text{Position} \to (\ 3.\ ),\ \text{Ordering} \to \left(\begin{array}{cc} 2.8 & \text{SGP} \\ 3.19333 & \text{PVV} \\ 5.69333 & \text{SP} \\ 6.02667 & \text{50Plus} \\ 6.69333 & \text{GL} \\ 6.8 & \text{PvdA} \\ 6.84 & \text{VVD} \\ 6.86667 & \text{CDA} \\ 6.87333 & \text{PvdD} \\ 6.92 & \text{D66} \\ 7.29333 & \text{CU} \end{array}\right)\Big\}$$

CU (Arie Slob) would not only have most votes in a Borda vote but would also win in a (binary) duel from the CDA (Van Haersma Buma), where the CDA would win if the CU would not partake. CU also wins from VVD (Rutte) that actually has the highest number of seats.

PM. This Borda ranking allows a check on the overall spectrum. The SGP is to the right of PVV and GL is between SP and PvdA. But for center parties the positions are mixed and we require some independent criterion.

Relation to Arrow's impossibility theorem

Arrow (1951) showed that five axioms resulted into a contradiction. He suggested that these axioms were reasonable and morally desirable for a democracy and he concluded to an impossibility of such (ideal) democracy. This approach has dominated the literature since then. Some economists expressed a preference for dictatorship. Here we take a different approach. It is reasonable and morally desirable that a process works. An impossibility thus is not reasonable and not morally desirable. Hence we have to drop one of the axioms. For example, a tie can be broken by the chairperson or a flip of a coin, but Arrow's axioms require always the same outcome and thus cannot deal with those time-dependent tie breaking rules. We can make a distintion between voting and deciding. For voting outcomes it is reasonable that there are preference cycles but when we decide on a tie then we use a tie breaking rule. For decision making we drop the axiom of independence of irrelevant alternatives. This axiom is better labelled as the axiom of pairwise decision making. We don't decide using only pairs and the limited information that they provide but we use all information provided by the whole voting field. In this approach, the Borda Fixed Point is likely to be seen by many as the best selection method. Alternative methods tend to have too many drawbacks. See Colignatus (2007, 2011) for a longer discussion. Here we can evaluate the performance of the mentioned alternatives. PM. Approval voting has some popularity in academic circles but see Colignatus (2005).

Alternative to BFP: Pairwise voting

It appears that the CU is also the Condorcet winner - i.e. wins from all pairwise votes.

This criterion however is not a strong one since there can be elections where there is no such winner or there can be elections where that winner loses in a Borda approach.

PairwiseMajority[]

VoteMarginToPref::cyc: Cycle {GL, 50Plus, D66, GL}

$$\left\{\text{VoteMargin} \to \text{VoteMargin}\left(\begin{pmatrix} 0 & -\frac{2}{75} & -\frac{2}{75} & -\frac{16}{75} & \frac{1}{15} & -\frac{2}{5} & -\frac{37}{75} & \frac{19}{25} & \frac{13}{25} & -\frac{13}{75} & \frac{1}{25} \\ \frac{2}{75} & 0 & -\frac{7}{25} & \frac{2}{75} & \frac{2}{75} & \frac{2}{75} & \frac{2}{75} & \frac{4}{5} & \frac{24}{25} & \frac{2}{75} & \frac{7}{75} \\ \frac{2}{75} & \frac{7}{25} & 0 & \frac{2}{75} & \frac{4}{75} & \frac{2}{25} & \frac{2}{75} & \frac{4}{5} & \frac{24}{25} & \frac{6}{25} & \frac{7}{75} \\ \frac{16}{75} & -\frac{2}{75} & -\frac{2}{75} & 0 & -\frac{1}{25} & -\frac{6}{25} & \frac{11}{25} & \frac{19}{25} & \frac{13}{25} & \frac{4}{15} & -\frac{2}{75} \\ -\frac{1}{15} & -\frac{2}{75} & -\frac{4}{75} & \frac{1}{25} & 0 & 0 & -\frac{1}{75} & \frac{16}{75} & \frac{52}{75} & \frac{14}{25} & \frac{1}{25} \\ \frac{2}{5} & -\frac{2}{75} & -\frac{2}{25} & \frac{6}{25} & 0 & 0 & -\frac{1}{75} & \frac{16}{75} & \frac{13}{25} & \frac{23}{75} & \frac{1}{25} \\ \frac{37}{75} & -\frac{2}{75} & -\frac{2}{75} & -\frac{11}{25} & \frac{1}{75} & \frac{1}{75} & 0 & \frac{4}{5} & \frac{67}{75} & \frac{13}{75} & -\frac{11}{75} \\ -\frac{19}{25} & -\frac{4}{5} & -\frac{4}{5} & -\frac{19}{25} & -\frac{16}{75} & -\frac{16}{75} & -\frac{4}{5} & 0 & -\frac{19}{75} & -\frac{16}{75} & -\frac{4}{5} \\ -\frac{13}{25} & -\frac{24}{25} & -\frac{24}{25} & -\frac{13}{25} & -\frac{52}{75} & -\frac{13}{25} & -\frac{67}{75} & \frac{19}{75} & 0 & -\frac{52}{75} & -\frac{67}{75} \\ \frac{13}{75} & -\frac{2}{75} & -\frac{6}{25} & -\frac{4}{15} & -\frac{14}{25} & -\frac{23}{75} & -\frac{13}{75} & \frac{16}{75} & \frac{52}{75} & 0 & -\frac{3}{25} \\ -\frac{1}{25} & -\frac{7}{75} & -\frac{7}{75} & \frac{2}{75} & -\frac{1}{25} & -\frac{1}{25} & \frac{11}{75} & \frac{4}{5} & \frac{67}{75} & \frac{3}{25} & 0 \end{pmatrix}\right)\right\},$$

$$1 \to \{\text{StatusQuo} \to \text{50Plus}, \text{Sum} \to \{4, 9, 10, 5, 6, 7, 6, 0, 1, 3, 5\}, \text{Max} \to 10, \text{Condorcet winner} \to \text{CU}, \text{Pref} \to \text{Pref}(\text{PVV}, \text{SGP}, \{\text{50Plus}, \text{D66}, \text{GL}, \text{PvdA}, \text{PvdD}, \text{SP}, \text{VVD}\}, \text{CDA}, \text{CU}), \text{Find} \to \text{CU}, \text{LastCycleTest} \to \text{False}, \text{Select} \to \text{CU}\},$$

$$N \to \left\{\text{Sum} \to \left\{\frac{4}{75}, \frac{26}{15}, \frac{194}{75}, \frac{46}{25}, \frac{104}{75}, \frac{8}{5}, \frac{131}{75}, -\frac{421}{75}, -\frac{32}{5}, -\frac{46}{75}, \frac{42}{25}\right\}, \text{Pref} \to \text{Pref}(\text{SGP}, \text{PVV}, \text{SP}, \text{50Plus}, \text{GL}, \text{PvdA}, \text{VVD}, \text{CDA}, \text{PvdD}, \text{D66}, \text{CU}), \text{Select} \to \text{CU}\right\}, \text{All} \to \text{CU}\right\}$$

PM. If pairwise comparisons do not generate a Condorcet winner, then we conclude to a deadlock, and that deadlock might be broken by persistence of the Status Quo (case 1 → ...) or by taking the item with the highest margin count (case N → ...).

Alternative to BFP: the current Plurality voting

Plurality selects the person with the highest vote - that might be less than 50%. All parties vote for their own candidate. Here VVD (Rutte) wins but has only 27% and much less than 50%.

Plurality[] // N

$$\left\{\text{Sum} \to \begin{pmatrix} \text{50Plus} & 0.0133333 \\ \text{CDA} & 0.0866667 \\ \text{CU} & 0.0333333 \\ \text{D66} & 0.08 \\ \text{GL} & 0.0266667 \\ \text{PvdA} & 0.253333 \\ \text{PvdD} & 0.0133333 \\ \text{PVV} & 0.1 \\ \text{SGP} & 0.02 \\ \text{SP} & 0.1 \\ \text{VVD} & 0.273333 \end{pmatrix}, \text{Ordering} \to \begin{pmatrix} 0.0133333 & \text{50Plus} \\ 0.0133333 & \text{PvdD} \\ 0.02 & \text{SGP} \\ 0.0266667 & \text{GL} \\ 0.0333333 & \text{CU} \\ 0.08 & \text{D66} \\ 0.0866667 & \text{CDA} \\ 0.1 & \text{PVV} \\ 0.1 & \text{SP} \\ 0.253333 & \text{PvdA} \\ 0.273333 & \text{VVD} \end{pmatrix}, \text{Max} \to \{\text{VVD}, 0.273333\}, \text{Select} \to \{\}\right\}$$

An example pairwise vote: CU and CDA

The following example shows that the candidate of the CU would win from the candidate of the CDA in a pairwise vote.

This already follows from the phenomenon that CU is the Condorcet winner.

There are however 55 of such pairwise votes and thus it is simplest if all Members of Parliament would enter a single preference list (as shown above) whereafter the algorithm determines the overall result.

Being a Condorcet winner is not necessarily the best condition. The Borda Fixed Point also takes account of the rank position.

```
SelectPreferences[{CDA, CU}]
```

CheckVote::adj: NumberOfItems adjusted to 2

$$\left\{\text{Number of Voters} \to 11,\ \text{Number of items} \to 2,\ \text{Votes are nonnegative and add up to 1} \to \text{True},\right.$$
$$\text{Preferences fit the numbers of Voters and Items} \to \text{True},\ \text{Type of scale} \to \text{Ordinal},$$
$$\text{Preferences give a proper ordering} \to \text{True},\ \text{Preferences add up to} \to \{3\},$$
$$\left.\text{Items} \to \{\text{CDA, CU}\},\ \text{Votes} \to \left\{\frac{1}{75}, \frac{13}{150}, \frac{1}{30}, \frac{2}{25}, \frac{2}{75}, \frac{19}{75}, \frac{1}{75}, \frac{1}{10}, \frac{1}{50}, \frac{1}{10}, \frac{41}{150}\right\}\right\}$$

```
Plurality[]
```

$$\left\{\text{Sum} \to \begin{pmatrix} \text{CDA} & \frac{9}{25} \\ \text{CU} & \frac{16}{25} \end{pmatrix},\ \text{Ordering} \to \begin{pmatrix} \frac{9}{25} & \text{CDA} \\ \frac{16}{25} & \text{CU} \end{pmatrix},\ \text{Max} \to \left\{\text{CU},\ \frac{16}{25}\right\},\ \text{Select} \to \text{CU}\right\}$$

An example pairwise vote: CU and VVD

Since VVD has the greatest number of seats its leader is conventionally regarded as the candidate to become Prime Minister. He however loses from Slob of CU in a pairwise vote.

```
SelectPreferences[{VVD, CU}];
```

CheckVote::adj: NumberOfItems adjusted to 2

```
Plurality[]
```

$$\left\{\text{Sum} \to \begin{pmatrix} \text{CU} & \frac{41}{75} \\ \text{VVD} & \frac{34}{75} \end{pmatrix},\ \text{Ordering} \to \begin{pmatrix} \frac{34}{75} & \text{VVD} \\ \frac{41}{75} & \text{CU} \end{pmatrix},\ \text{Max} \to \left\{\text{CU},\ \frac{41}{75}\right\},\ \text{Select} \to \text{CU}\right\}$$

Conclusion

The current Dutch convention originates in political practice and hence has a firm empirical base. It is a somewhat daring thought to test, clarify and enhance the political base of a potential Prime Minister by using more sophisticated techniques. The challence is shown by the difference between

the conventional outcome of VVD with 41 seats and the Borda Fixed Point outcome of CU with 5 seats, all in a Parliament with 150 seats. The conventional approach uses only limited information (the top preference) and the sophisticated method uses whole rankings and a test on stability. The conventional approach has the advantage that it has been used over the last century but perhaps that century also shows its drawbacks.

The role of the Prime Minister is to be above the parties, to be there for all citizens, to manage the decision making process, and to clarify government policy. Frequently there is a "Prime Minister bonus" at the polls caused by the phenomenon that many voters appreciate this role so that the Prime Minister in function gets more votes than would normally be the case. The position of Prime Minister tends to be a politically desirable goal. It provides a position to also implement specific political goals under the umbrella (or perhaps guise) of the common cause. The original function can be enhanced when the selection is somewhat separated from the bargaining process.

The current convention in Holland is to target a coalition with minimal majority and to select the Prime Minister with Plurality in that coalition. This thus finds a challenge in the optimal approach of both mirroring Parliament and selecting the Prime Minister with the widest political base (as indicated by the Borda Fixed Point method).

These findings for Holland support an earlier suggestion that also the US and UK and France move towards PR and that the US and France move to the selection of their Presidents by Parliament rather than by direct elections.

Appendix A: Strategic voting

Strategic voting can never be fully avoided.

VVD might give its competitor CU much less weight and then it indeed succeeds in toppling CU. If it ranks CDA above D66 then the PvdA will be the Borda FP winner, so we allow a switch so that D66 turns up as the winner.

```
Pref[VVD] =
  {VVD > CDA > CU > D66 > PvdD > "50Plus" > PVV > GL >  PvdA > SP > SGP };

Pref[VVD] =
  {VVD > D66 > CDA >  PvdD > "50Plus" > PVV > GL >  PvdA > SP > SGP  > CU };

Preferences = PrefToList[ToPref @@ Pref[#]] &  /@ Items
```

$$\begin{pmatrix} 11 & 4 & 8 & 10 & 6 & 7 & 9 & 1 & 2 & 5 & 3 \\ 3 & 11 & 10 & 2 & 7 & 4 & 8 & 1 & 5 & 6 & 9 \\ 7 & 10 & 11 & 2 & 6 & 8 & 3 & 1 & 9 & 5 & 4 \\ 9 & 3 & 5 & 11 & 8 & 10 & 6 & 1 & 2 & 4 & 7 \\ 8 & 4 & 5 & 6 & 11 & 9 & 7 & 1 & 2 & 10 & 3 \\ 6 & 4 & 5 & 9 & 10 & 11 & 7 & 1 & 2 & 8 & 3 \\ 10 & 4 & 7 & 9 & 8 & 5 & 11 & 1 & 2 & 6 & 3 \\ 3 & 8 & 9 & 2 & 1 & 4 & 7 & 11 & 6 & 5 & 10 \\ 3 & 9 & 10 & 1 & 2 & 4 & 8 & 6 & 11 & 5 & 7 \\ 8 & 4 & 5 & 7 & 10 & 9 & 6 & 1 & 2 & 11 & 3 \\ 7 & 9 & 1 & 10 & 5 & 4 & 8 & 6 & 2 & 3 & 11 \end{pmatrix}$$

```
BordaFP[]
```

D66

```
BordaAnalysis[] // N
```

$$\Big\{\text{Select} \to \text{D66},\ \text{BordaFPQ} \to \{\text{True}\},\ \text{WeightTotal} \to \{6.3,\ 6.59333,\ 5.10667,\ 7.46667,\ 6.96667,\ 7.07333,\ 7.14667,\ 3.46667,\ 3.07333,\ 5.96667,\ 6.84\},\ \text{Position} \to (\ 4.\ ),\ \text{Ordering} \to \begin{pmatrix} 3.07333 & \text{SGP} \\ 3.46667 & \text{PVV} \\ 5.10667 & \text{CU} \\ 5.96667 & \text{SP} \\ 6.3 & \text{50Plus} \\ 6.59333 & \text{CDA} \\ 6.84 & \text{VVD} \\ 6.96667 & \text{GL} \\ 7.07333 & \text{PvdA} \\ 7.14667 & \text{PvdD} \\ 7.46667 & \text{D66} \end{pmatrix} \Big\}$$

However, other parties might anticipate such VVD strategic voting behaviour and they might respond by entering CU much higher in their preferences. Then the CU indeed is restored in its top position. (If course, other parties may also see strategies by other parties and hence adapt other scores, which creates a complex whole.)

```
Pref[CDA] =
  {CDA > CU > VVD > PvdD > GL > SP > SGP > PvdA > "50Plus" > D66 > PVV };
Pref[CU] = {CU > CDA > SGP > PvdA > "50Plus" >
    GL > SP > VVD > PvdD > D66 > PVV };
Pref[D66] = {D66 > PvdA > CU > "50Plus" > GL > VVD >
    PvdD > SP > CDA > SGP > PVV };
Pref[GL] = {GL > CU > SP > PvdA > "50Plus" > PvdD >
    D66 > CDA > VVD > SGP > PVV };
Pref[PvdA] = {PvdA > CU > GL > D66 > SP > PvdD >
    "50Plus" > CDA > VVD > SGP > PVV };
Pref[PvdD] = {PvdD > CU > "50Plus" > D66 > GL > SP >
    PvdA > CDA > VVD > SGP > PVV };
Pref[PVV] = { PVV > CU > VVD > CDA > PvdD > SGP >
    SP > PvdA > "50Plus" > D66 > GL};
Pref[SGP] = { SGP > CU > CDA > PvdD > VVD > PVV >
    SP > PvdA > "50Plus" > GL > D66 };
Pref[SP] = {SP > GL > PvdA > CU > "50Plus" > D66 >
    PvdD > CDA > VVD > SGP > PVV };
Pref[VVD] = {VVD > D66 > CDA > PvdD > "50Plus" >
    PVV > GL > PvdA > SP > SGP > CU };
Pref["50Plus"] = {"50Plus" > CU > D66 > PvdD > PvdA >
    GL > SP > CDA > VVD > SGP > PVV };
```

```
Preferences = PrefToList[ToPref @@ Pref[#]] & /@ Items
```

$$\begin{pmatrix} 11 & 4 & 10 & 9 & 6 & 7 & 8 & 1 & 2 & 5 & 3 \\ 3 & 11 & 10 & 2 & 7 & 4 & 8 & 1 & 5 & 6 & 9 \\ 7 & 10 & 11 & 2 & 6 & 8 & 3 & 1 & 9 & 5 & 4 \\ 8 & 3 & 9 & 11 & 7 & 10 & 5 & 1 & 2 & 4 & 6 \\ 7 & 4 & 10 & 5 & 11 & 8 & 6 & 1 & 2 & 9 & 3 \\ 5 & 4 & 10 & 8 & 9 & 11 & 6 & 1 & 2 & 7 & 3 \\ 9 & 4 & 10 & 8 & 7 & 5 & 11 & 1 & 2 & 6 & 3 \\ 3 & 8 & 10 & 2 & 1 & 4 & 7 & 11 & 6 & 5 & 9 \\ 3 & 9 & 10 & 1 & 2 & 4 & 8 & 6 & 11 & 5 & 7 \\ 7 & 4 & 8 & 6 & 10 & 9 & 5 & 1 & 2 & 11 & 3 \\ 7 & 9 & 1 & 10 & 5 & 4 & 8 & 6 & 2 & 3 & 11 \end{pmatrix}$$

```
BordaFP[]
```

CU

```
BordaAnalysis[] // N
```

$$\left\{\text{Select} \to \text{CU},\ \text{BordaFPQ} \to \{\text{True}\},\right.$$
$$\text{WeightTotal} \to \{5.82667, 6.59333, 7.29333, 7.06, 6.62, 7.04667, 6.67333, 3.46667, 3.07333, 5.68667, 6.66\},$$
$$\left.\text{Position} \to (\ 3.\ ),\ \text{Ordering} \to \begin{pmatrix} 3.07333 & \text{SGP} \\ 3.46667 & \text{PVV} \\ 5.68667 & \text{SP} \\ 5.82667 & \text{50Plus} \\ 6.59333 & \text{CDA} \\ 6.62 & \text{GL} \\ 6.66 & \text{VVD} \\ 6.67333 & \text{PvdD} \\ 7.04667 & \text{PvdA} \\ 7.06 & \text{D66} \\ 7.29333 & \text{CU} \end{pmatrix}\right\}$$

A way to reduce strategic voting is to publish the votes, so that parties may have some explaining to do. A secret ballot would hold for the individual voter in the ballot box but not necessarily for voting by Members of Parliament on the Prime Minister. Such open statements of preference do not exclude strategic voting but they do somewhat reduce it. The element of strategy would be reduced even more when preference orderings are announced before the national elections so that there is less room for tinkering after the elections.

Overall, the political discussion and the selection of the Prime Minister of the coalition cabinet would seem more sophisticated when using orderings and the Borda Fixed Point method than merely taking the leader of the largest party. It would also be advisable to have the government mirror the distribution in Parliament, since one would need a good argument to exclude a party with say 5% of the votes from partaking in government. Party programs may also become a bit more realistic when parties have experience in government (though this is not necessarily shown in practice).

Appendix B: The Senate

The Dutch Senate has 75 seats and has been elected at another moment so that the distribution of seats is not the same. The political situation is complicated in that the VVD & PvdA coalition has

16+14 = 30 seats while 38 are required for a majority in the Senate. The situation is also complicated in a technical sense for us, in that 50Plus has one seat in the Senate and used to work along with the leader of the OSF with one seat, who was also number 2 on the list of 50Plus: but now there is a disagreement, the one-issue party split up along at least two issues, so that we are stuck with the technique of including an extra party.

```
Senate =
 {{CDA, 11}, {CU, 2}, {D66, 5}, {GL, 5}, {PvdA, 14}, {PvdD, 1}, {PVV, 10},
 {SGP, 1}, {SP, 8}, {VVD, 16}, {"50Plus", 1}, {OSF, 1}} // Sort
```

50Plus	1
CDA	11
CU	2
D66	5
GL	5
OSF	1
PvdA	14
PvdD	1
PVV	10
SGP	1
SP	8
VVD	16

```
spectrum2 =
  {SP , GL ,  PvdA , D66 , PvdD , "50Plus" , OSF, CU , CDA , VVD , PVV , SGP};
```

Restricting possible coalitions along this line:

```
Coalitions[Senate, spectrum2]
```

{SP, GL, PvdA, D66, PvdD, 50Plus, OSF, CU, CDA}	48
{GL, PvdA, D66, PvdD, 50Plus, OSF, CU, CDA}	40
{PvdA, D66, PvdD, 50Plus, OSF, CU, CDA, VVD}	51
{D66, PvdD, 50Plus, OSF, CU, CDA, VVD, PVV}	47
{PvdD, 50Plus, OSF, CU, CDA, VVD, PVV}	42
{50Plus, OSF, CU, CDA, VVD, PVV}	41
{OSF, CU, CDA, VVD, PVV}	40
{CU, CDA, VVD, PVV}	39
{CDA, VVD, PVV, SGP}	38

There is indeed a coalition in which OSF partakes while 50Plus doesn't. However, this is a coalition with the PVV that temporarily has a somewhat outcast role given the failure of the former coalition. Hence we can simplify the situation by joining up OSF and 50Plus for technical reasons only, and then compare the coalitions in House and Senate.

```
Senate2 =
  {{CDA, 11}, {CU, 2}, {D66, 5}, {GL, 5}, {PvdA, 14}, {PvdD, 1}, {PVV, 10},
 {SGP, 1}, {SP, 8}, {VVD, 16}, {"50Plus", 2}} // Sort;

coalssenate = Coalitions[Senate2, spectrum];
```

It follows that the 2nd (GL to CDA) and 3rd (PvdA to VVD) coalitions have dual majorities in the House and the Senate. The first coalition in the Senate (SP to CDA) also has a larger majority in the House, but then it is not minimal and therefor not listed.

The coalition center-left coalition of GL, PvdA, D66, PvdD, 50Plus, CU, CDA has a majority in both House and Senate. It is amazing that Samsom of the PvdA did not try it. It would better fit his

agenda and make him Prime Minister. But the CDA had dropped from 41 to 21 to 13 seats in 2006, 2010 and 2012, and apparently rejected government responsibility in favour for a comeback from opposition.

```
{coalshouse, coalssenate}
```

$$\left\{\begin{pmatrix} \{SP, GL, PvdA, D66, PvdD, 50Plus, CU\} & 78 \\ \{GL, PvdA, D66, PvdD, 50Plus, CU, CDA\} & 76 \\ \{PvdA, D66, PvdD, 50Plus, CU, CDA, VVD\} & 113 \\ \{D66, PvdD, 50Plus, CU, CDA, VVD, PVV\} & 90 \\ \{PvdD, 50Plus, CU, CDA, VVD, PVV\} & 78 \\ \{50Plus, CU, CDA, VVD, PVV\} & 76 \\ \{CU, CDA, VVD, PVV, SGP\} & 77 \end{pmatrix}, \begin{pmatrix} \{SP, GL, PvdA, D66, PvdD, 50Plus, CU, CDA\} & 48 \\ \{GL, PvdA, D66, PvdD, 50Plus, CU, CDA\} & 40 \\ \{PvdA, D66, PvdD, 50Plus, CU, CDA, VVD\} & 51 \\ \{D66, PvdD, 50Plus, CU, CDA, VVD, PVV\} & 47 \\ \{PvdD, 50Plus, CU, CDA, VVD, PVV\} & 42 \\ \{50Plus, CU, CDA, VVD, PVV\} & 41 \\ \{CU, CDA, VVD, PVV\} & 39 \\ \{CDA, VVD, PVV, SGP\} & 38 \end{pmatrix}\right\}$$

This reasoning still is within the context of trying to form a minimal coalition of 50% + 1. The alternative approach in “Voting Theory for Democracy” is to mirror parliament into government, so that also smaller parties may partake in government responsibility and achieve political maturity. It is a somewhat undemocratic and misleading populist manoeuvre to use the opposition benches to bounce back into power. It is better to show what you are up to in government, and minority parties should have a chance to do so too. The Greens could be involved in greening the economy, 50Plus could try to improve the position of the elderly, and so on, all within the limits of tolerance of the other parties in Parliament, but for smart proposals these limits of tolerance can be ample. The present coalition of VVD & PvdA also has to shop around to find a majority in the Senate, so that principle of shopping applies in any case.

Appendix C: Swings in positions versus stability

The main body of the text shows various swings in political positions. Namely: (1) The fall of the original VVD & CDA & PVV coalition anyway that caused the September elections, (2) GL moving from left to right to left again, (3) PvdA from contra to pro an application of the EU 3% deficit rule, (4) PvdA from contra to pro Rutte as Prime Minister, (5) VVD from contra to pro PvdA in government, (6) CDA from pro to contra participation in government überhaupt, (7) 50Plus with the split-up with OSF.

There actually are more swings in this period. An important example is that Mark Rutte as incumbent Prime Minister and candidate for re-election promised that no new money would go to Greece. However, every serious analyst knew that the resolution of the Greek debt would require another round of bailouts. This indeed happened after the September 12 elections, namely at the end of November, see BBC (2012). Thus, the Dutch Prime Minister either didn't know what he was talking about or told an election lie and gave a false promise. Such is the dismal state of Dutch politics anno 2012.

The swinging affects the bargaining process too. This swinging or switching isn’t merely without principle. A party may adopt a policy that goes against its fundamental principles, which creates an internal instability that later erupts into much ado.

A key example is the VVD & PvdA “trade-off” on housing tax benefits. In Holland, interest payments on home financing loans were fully tax deductible. Home owners smartly decided to maximise their benefit, and the earlier tradition for annuity loans with redemption in 30 years was replaced by bullet loans that require only redemption at death when the house would be sold to pay off the mortgage. The VVD has the tradition of being anti-tax, and supported that old scheme. The PvdA has the tradition of income equality, and objected that high incomes with high tax rates had most benefit of that old scheme. It is a non-issue, since lower tax returns for incomes after deduction cause higher

tax rates, so that the effective burden for the high incomes remains the same. The only effect of the tax deduction rule is a redistribution of the tax burden amongst the high incomes themselves, from home owners to home rentals. It doesn't fit the PvdA tradition to be much worried what happens about such a redistribution amongst the wealthy. The right approach for the PvdA would be to regard it as an issue for the VVD. However, in the coalition discussion with the VVD, the PvdA regarded the abolition of the home deductibility as a key PvdA point. It got this accepted, and in return the PvdA had to accept some VVD points. The PvdA paid much to get essentially nothing. This is smart bargaining on part of the VVD: to get something in return for essentially nothing. The only cost to the VVD is that its public image is affected, in that people associate the abolition of a deduction as an increase in tax. However, the VVD has ample scope to urge for lower tax rates, so that the public image is hardly affected. The overall result also is dramatically negative for the housing market too, with important consequences for the economy. The VVD & PvdA coalition chose to restrict tax deductibility to annuity loans only. Home buyers now face higher monthly bills because of the redemption component. When home owners approach death, they find their wealth locked up in their homes, so that only their inheritors benefit. The housing and building market is Holland is in a serious recession. House prices in Holland are falling much faster now, aggravating the problems of owners with high mortgages. There is one tiny group that might have a small advantage. When home owners are forced to redeem their loans, banks have a higher cash flow, and can better meet the higher Basel requirements. In analysing a situation it is often advisable "to follow the money" and this causes the hypothesis that VVD-advisors in the banking community have had a large role in this particular part of the coalition bargaining process.

The earlier VVD & CDA & PVV coalition had an anti-EU flavour. The VVD & PvdA coalition has a EU-tolerant flavour, and its creation was welcomed by commentators in Brussels. The Dutch Minister of Finance Jeroen Dijsselbloem (PvdA) now is chairman of the Eurogroup Ministers of Finance. However, there is still a risk of instability that outsiders may not be aware of. In the September 2012 elections, the PvdA had a ballot agreement with the SP on the left. The SP originally was higher in the polls, but in the battle between PvdA and VVD to become the largest party and deliver the Prime Minister, potential voters for the SP voted for the PvdA. In the subsequent coalition bargaining, the VVD blocked the participation of the SP. The 38+15 = 53 seats of PvdA+SP would outnumber the 41 seats for the VVD in the coalition itself. The PvdA allowed the VVD to deliver the Prime Minister again. Obviously, there is a lot of disappointment now both in the SP and amonst its potential voters who helped the PvdA. The lastest poll by De Hond (2013) shows VVD and PvdA both at 26 seats, or a total of 52 / 150 of Parliament. Newspaper interviews with the leaders of the various parties in Parliament also show that current Prime Minister Mark Rutte has lost much personal credit, given many broken promises in both the last failed coalition of VVD & CDA & PVV and the creation of the current one. 50Plus is on the rise with 9 seats now that the elderly feel the burden of lower pensions and higher health bills. The PVV is on the rebound again with its opposition to the EU and migration, with 22 seats. These are polls only, but it may be clear that Dutch politics hasn't returned to stability yet.

Overall, it would be wise for parties to try to limit swinging or switching. An investment in better policy analysis would help. An Economic Supreme Court would eliminate much political nonsense, see Colignatus (2011) (DRGTPE), so that political heat dissolves under scientific scrutiny, and so that the real political choices appear to be different from what is commonly thought.

Subsequently, we return to the suggestion that the government better mirrors Parliament. A greater respect for what democracy means would help. It is not merely the will of the majority but an eye for minority rights. It is actually nice to see that the popular sentiment with the increasing dispersion of views already encourages politicians to think along those lines.

Literature

Thomas Cool uses the name Colignatus for his work in science.

Arrow, K. (1951, 1963), "Social choice and individual values", J. Wiley

BBC (2012), “Eurozone crisis explained”, November 27, http://www.bbc.co.uk/news/business-13798000

Colignatus, Th. (2005), "Approval Voting" lacks a sound moral base for the individual voter's choice of approval versus non-approval, especially when the Status Quo is neglected", ewp-get/0503014, March 26 2005, http://thomascool.eu/Papers/SocialWelfare/ApprovalVoting.pdf

Colignatus, Th. (2006), "Application of the Borda Fixed Point voting rule to the Dutch Parliamentary elections 2006", November 23 2006, http://thomascool.eu/Papers/SocialWelfare/BordaFP-DutchElections2006.pdf

Colignatus, Th. (2007, 2011), "Voting Theory for Democracy", 3rd edition, http://thomascool.eu/Papers/VTFD/Index.html. See also http://thomascool.eu/Papers/SocialWelfare/WithoutTimeNoMorality.html.

Colignatus, Th. (2010a), "Single vote multiple seats elections. Didactics of district versus proportional representation, using the examples of the United Kingdom and The Netherlands", May 19 2010, MPRA 22782, http://mpra.ub.uni-muenchen.de/22782/.

Colignatus, Th. (2010b), "The performance of four possible rules for selecting the Prime Minister after the Dutch Parliamentary elections of June 2010", MPRA 23240, http://mpra.ub.uni-muenchen.de/23240/.

Colignatus, Th. (2011), "Definition & Reality in the General Theory of Political Economy”, http://thomascool.eu/Papers/Drgtpe/Index.html

Hond, M. de (2013), “Actuele resultaten politieke voorkeur”, https://n7.noties.nl/peil.nl/

Liljedahl, M. (1995), "The Banzhaf index”, http://library.wolfram.com/infocenter/MathSource/3592/

Saari, D.G. (2001), "Decisions and elections. Explaining the unexpected", Cambridge University Press

Stokman, F.N., R.C.H. van Oosten, J. Dijkstra, A.P.M. Lucardie (2012), “Kiezers dwingen breed geaccepteerde oplossing af (2012)”, http://www.decide-rug.nl/index.php?title=Kiezers_dwingen_breed_geaccepteerde_oplossing_af_(2012_)